CLAIMS:

1.   A method of load dependent analyzing an optical component (114,),
     comprising the steps of:

     intermittently providing a load signal (108) to the component (114),

5   providing a measurement signal (115a) to the component (114), so that
     the component (114) can influence the measurement signal (115a) to
     create a component signal (120) influenced by the component (114),

     superimposing a reference signal (115b) with the component signal (120)
     to a superimposed signal (118),

10   detecting the superimposed signal (118) when the loading signal (108) is
     not present at the component (114) to provide an information containing
     signal (126), and

     processing the information containing signal (126) to determine an optical
     property of the component (114) dependent on a property of the load
15   signal (108).

2.   The method of claim 1, further comprising the steps of:

     intermittently providing the load signal (108) to the component (114,) by
     periodically providing the load signal (108) to the component (114), and

     detecting the superimposed signal (118) during periods in which the
20   loading signal (108) is not provided to the component (114).

3.   The method of claim 1 or any one of the above claims, further comprising
     the steps of:

     intermittently providing the load signal (108) to the component (114) by
     switching the load signal (108) to the component (114, 114a) on and off,
25   and

detecting the superimposed signal (118) during periods in which the loading signal (108) is switched off.

4. The method of claim 1 or any one of the above claims, further comprising the step of:

5   composing the load signal (108) by at least two loading signals (106) spaced in optical frequency.

5. The method of claim 4, further comprising the step of:

        intermittently providing the load signal (108) to the component (114) by executing at least one of the following: switching the loading signals (106)
10   on and off, modulating the load signal (108).

6. The method of claim 1 or any one of the above claims, further comprising the step of:

        controlling the provision of the load signal (108) by a controlling signal (105, 107, 129).

15 7. The method of claim 6, further comprising the step of:

        mixing the controlling signal (105, 107, 129) with the information containing signal (126).

8. The method of claim 1 or any one of the above claims, further comprising the step of:

20   band pass filtering the information containing signal (126) before processing the information containing signal (126).

9. The method of claim 1 or any one of the above claims, further comprising the step of:

        at least temporarily switching off the reference signal to detect solely the
25   signal (120, received from the component (114,) to perform a time

domain extinction measurement of the component (114,).

10. The method of claim 1 or any one of the above claims, further comprising the step of:

the determined optical properties comprising at least one of the following group comprising: group delay, differential group delay, loss, gain, noise figure, gain tilt, polarization dependent gain

11. The method of claim 1 or any one of the above claims, further comprising the step of:

deriving the reference signal (115b) and the measurement signal (115a) from an initial signal (115).

12. An apparatus for load dependent analyzing an optical component (114, , comprising:

an interferometer (112) comprising:

a reference arm (116) to receive a reference signal (115b), and

a measurement arm (111) to receive a measurement signal (115a) and for providing the measurement signal (115a) to the component (114), so that the component (114) can influence the measurement signal (115a) to create a signal (120) influenced and received from the component (114),

a load source (104) for intermittently providing a load signal (108) to the component (114),

a first beam splitter (121) at the beginning of the reference arm (116) and of the measurement arm (111) for splitting an initial signal (115) into the reference signal (115b) and into the measurement signal (115a)

a second beam splitter (123) at the end of the reference arm (116) and of the measurement arm (111) for superimposing the reference signal

(115b) with a signal (120) received from the component (114,) to provide a superimposed signal (118),

a detector (124) for detecting the superimposed signal (118) when the loading signal (108) is not present at the component (114) to provide an information containing signal (126), and

a signal processor (140) for processing the information containing signal (126) to determine an optical property of the component (114).

13. The apparatus of claim 12,

the load source (104) being a load bank (102) composed of at least two loading sources (104) for composing the load signal (108) by at least two loading signals (106) spaced in optical frequency.

14. The apparatus of claim 12 or any one of the above claims,

the load source (104) being composed of at least two loading sources (104) for composing the load signal (108) by at least two loading signals (106) spaced in optical frequency, and further comprising at least one of the following:

a modulator (110) for intermittently providing the load signal (108) to the component (114) by modulating the load signal (108), a first switch for switching the loading source (104) on and off.

15. The apparatus of claim 12 or any one of the above claims, further comprising:

a RF source (132) for controlling the provision of the load signal (108) by a controlling signal (105, 107, 129).

16. The apparatus of claim 15, further comprising:

a mixer (128) for mixing the controlling signal (105, 107, 129) with the information containing signal (126).

17. The apparatus of claim 12 or any one of the above claims, further comprising:

a band pass filter (136) for extracting the information containing signal (126) before processing the information containing signal (126).

5 18. The apparatus of claim 12 or any one of the above claims, further comprising:

a second switch (119) for at least temporarily switching off the reference signal (115b) to detect solely the signal (120) received from the component (114) to be able to perform a time domain extinction
10   measurement of the component (114).

19. The apparatus of claim 12 or any one of the above claims, further comprising:

the determined optical properties comprising at least one of the following: group delay, differential group delay, loss, gain, noise figure, gain tilt,
15   polarization dependent gain

20. An apparatus adapted for load dependent analyzing an optical component (114), comprising:

a first signal source adapted for intermittently providing a load signal (108) to the component (114),

20   a second signal source adapted for providing a measurement signal (115a) to the component (114), so that the component (114) can influence the measurement signal (115a) to create a component signal (120) influenced by the component (114),

a reference signal source adapted for providing a reference signal (115b),

25   a detector adapted for detecting, when the loading signal (108) is not present at the component (114), a superimposed signal (118) as a

superimposition of the reference signal (115b) with the component signal (120) to a superimposed signal (118), and for providing therefrom an information containing signal (126), and

5   a processing unit adapted for processing the information containing signal (126) to determine an optical property of the component (114) dependent on a property of the load signal (108).